REQUEST FOR RECONSIDERATION

Claims 1-5, 7-8, 10-12 and 17-18 remain active in this application.

The claimed invention is directed to a process for producing closed-celled **rigid** polyurethane foams as well as to a graft polyol which may be used to produce closed-celled **rigid** polyurethane foams.

Rigid polyurethane foams having a closed-cell structure are known for thermal insulation. Reduced molding times and good mold flow properties are still sought in closed-celled rigid polyurethane foam producing processes.

The claimed invention addresses this problem by providing a process for preparing **rigid** closed-cell polyurethane foam comprising reacting polyisocyanate with a compound having at least two reactive hydrogen atoms in the presence of catalyst and a blowing agent, wherein the compound having at least two hydrogen atoms comprises **at least one graft polyol** having **a hydroxyl value of from 100 to 800 mg KOH/g**. Applicants have discovered that such a graft polyol provides for good properties in the process for producing a closed-celled **rigid** polyurethane foam and is able to provide for crosslinking densities of the polyurethane network, which are higher than when using graft polyols based on flexible foam carrier polyols (pg 6, lines 33-35 of applicants' specification). Such a process is nowhere disclosed or suggested in the cited art of record.

The rejections of claims 1-5, 7, 8, 10-12, 17 and 18 under 35 U.S.C. §103(a) in view of Haider et al. U.S. 2004/0014828, in view of Matsumoto et al. U.S. 6,117,937 in view of EP 786,480 is respectfully traversed.

None of the cited art of record discloses or suggests the claimed process of producing a closed-cell **rigid** polyurethane foam with a graft polyol having a hydroxyl value of from 100 to 800 mg KOH/g.

Haider et al. describes a water-blown **rigid** polyurethane in which the polyol mixture comprises i) at least one polymer polyol, ii) at least one polyol having a hydroxyl value of from about 200 to about 800, and iii) optionally at least one polyol having a hydroxyl value ranging from about 25 to about 115 (see abstract). **Polymer** polyols are described in paragraph [0011] as including PHD polymer polyols and SAN polymer polyols having low hydroxyl values, but none having a hydroxyl value of from 100-800 as claimed.

In contrast, the claimed invention is directed to a process for producing closed-celled rigid polyurethane foams by reacting a graft polyol having a hydroxyl value of from 100 to 800 mg KOH/g. The claims recite **a hydroxyl value of from 100 to 800 mg KOH/g**. As the cited reference only discloses polymer polyol having a hydroxyl value of from 15 to about 50, a graft polyol having a hydroxyl value of from 100 to 800 mg KOH/g would simply not have been obvious. The claimed invention is clearly not rendered obvious from this reference.

The basic deficiency of the primary reference is not cured by either of the secondary references, as neither suggests using a graft polyol having a hydroxyl value of from 100 to 800 mg KOH/g in the preparation of a closed-cell **rigid polyurethane**.

Mastsumoto et al has been cited for a disclosure of a polymer polyol having a hydroxyl value 600 mg KOH/g (paragraph column 4, lines 37-41). However, the reference is directed to preparation of **a flexible polyurethane foam** (column 1, lines 23-26) and **not** to a closed cell **rigid** polyurethane foam.

> The object of the invention is to provide **polymer dispersed polyol** which has an effect as **a raw material of flame retardant polyurethane** having excellent humid aged compression set and other durability, the preparation process of the same, and flame retardant polyurethane resin and flame retardant polyurethane foam which are prepared from the same. (column 2, lines 26-32, emphasis added)

However the flame retardant polyurethane of Matsumoto et al. is an open cell, flexible polyurethane foam.

> Particularly when polymer dispersed polyol is used for **preparing flexible polyurethane foam**, effects such as increase in open cell content and improvement in indentation hardness can be obtained on the resultant foam. (column 1, lines 23-26)

Thus, the polyol of Matsumoto et al. is used in the preparation of **flexible** polyurethane foams, and has been selected for its ability to provide such a **flexible** flame retardant polyurethane foam with excellent humid aged compression set and other durability. Clearly the value of the polymer polyol of Matsumoto et al. is for the properties it confers to **a flexible polyurethane foam**.

Page 4 of the official action asserts that the deficiencies of Haider et al.'s generic teaching is addressed by Matsumoto et al. since it disclosed a polyol known in **the polyurethane foam art** and therefore the combinability with the rigid foam of Haider et al. is of no import.

Applicants respectfully submit that those of ordinary skill in the art draw a distinction between rigid and flexible polyurethanes foams and the polyols used to prepare same.

Typically, rigid polyurethane foams are obtained by reacting polyol components having a higher functionality and a shorter chain length as compared with polyether polyols used for polyurethane flexible foams. This arises in a higher hydroxyl value for rigid foam polyols, in which the hydroxyl value is from 350 to 650. As evidence of the hydroxyl value of conventional polyols used in a rigid polyurethane foam, applicants enclose herewith a passage from "Polyurethane Handbook, Edited Guenther Oertel, 2nd Edition"(1994), p 248.

Thus, when Haider et al. states that "Any polymer polyol known **in the art** can be used as component i)..."(paragraph[0011]), the "art" he is referring to is the art of closed-cell rigid water-blown polyurethane foams. While the term "art" is not defined, it could most broadly mean the art of all of technology or the art of closed-cell rigid water-blown polyurethane foams. There is no basis to specifically limit the term 'art" to that of polyurethane foams." Thus, since interpretation of the term "art" to comprise all of

technology would be absurd, the only reasonable and supported interpretation of the term "art" would be that of closed-cell rigid water-blown polyurethane foams, the area of technology to which Haider et al. pertains.

As a polyol for **a flexible polyurethane foam**, one of ordinary skill in the art would not be motivated to use such a polyol to prepare the **rigid polyurethane** of Haider et al. While the official action suggests motivation to use the polyol of Matsumoto et al. in the Haider et al. polyurethane in order to impart a compression and durability enhancing effect, such analysis ignores the fundamental differences between the polyurethane materials being prepared as **rigid** v **flexible**. Accordingly the combination of references fails to render the claimed invention obvious.

EP 786,480 merely describes the preparation of a polymer polyol which may be used in the generic production of polyurethane articles such as a polyurethane foam, but there is no disclosure or suggestion of a graft polyol having a hydroxyl value of from 100 to 800 in the preparation of a closed-celled rigid polyurethane foam. The reference was merely cited for a disclosure of particle size.

As the cited combination of references fails to disclose or suggest the claimed process in which a graft polyol having a hydroxyl value of 100 to 800 mg KOH/g in the preparation of a closed cell rigid polyurethane foam, the claimed invention would not have been obvious and withdrawal of the rejection under 35 U.S.C. §103(a) is respectfully requested.

Applicants submit that this application is now in condition for allowance and early notification of such action is earnestly solicited.

Respectfully submitted,

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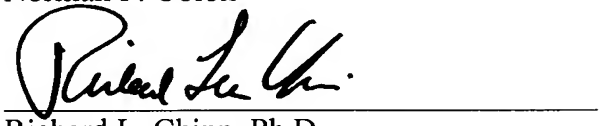

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